Natural 4.1.2 Release Notes - General Information

Natural 4.1.2 Release Notes - General Information

The following topics are covered:

Introduction

These Release Notes inform you of the enhancements provided with Version 4.1.2 of Natural.

Natural 4.1.2 contains all Zaps, INPL updates, early warnings and source changes applied to Natural 3.1.6 as error corrections.

Prerequisites

- Operating/Teleprocessing Systems Required
- Discontinued Support of Operating/Teleprocessing Systems
- Assemblers Required

Operating/Teleprocessing Systems Required

Natural Version 4.1 requires the following versions of the following operating/teleprocessing systems:

Product	Version
BS2000/OSD	3, 4 or 5
OS/390	2.10
z/OS	1.2, 1.3 or 1.4
VSE/ESA	2.6 or 2.7
z/VM	3.1, 4.2, 4.3 or 4.4
Com-plete	6.2.1 Patch Level 4 with SMARTS APS Version 2.7.2
CICS/TS	1.3 for OS/390, 1.1.1 for VSE/ESA
CICS/VSE	2.3
IMS/TM	7.1 or 8.1
UTM	4 or 5
TIAM	All versions available with OSD Version 3, 4 or 5.

Software AG provides Natural support for the operating/teleprocessing system versions supported by their respective manufacturers. Generally, when an operating/teleprocessing system provider stops supporting a version of an operating system, Software AG will stop supporting that operating system version.

Although it may be technically possible to run a new version of Natural on an old operating/teleprocessing system, Software AG cannot continue to support operating/teleprocessing system versions that are no longer supported by the system’s provider.

Discontinued Support of Operating/Teleprocessing Systems

Software AG will stop supporting Natural and all related add-on products on BS2000/OSD Version 3 on June 30, 2004.

Assemblers Required

Natural Version 4.1 requires one of the following assemblers for the assembly of its source modules:

- "HL" Assembler Version 1.3 (IBM),
- "Assembh" Assembler (Siemens).

It may well be possible that the source modules can be assembled with older assemblers; however, Software AG cannot guarantee this.

Documentation

With this release, a completely revised and updated set of documents is distributed on CD-ROM. In addition, the following changes and enhancements to the Natural documentation have been introduced with this release:

- **New Documentation Structure**

  The structure of the online documentation and the navigation have been improved further. Also, a clearer distinction is made between documents concerning the Natural development environment and those dealing with the Natural programming language.
  Please, note that the former General Information section of the Reference documentation has been reorganized and integrated in the Statements documentation (on the Natural Documentation Overview page, see Language > Statements > Statement Usage Related Topics).

- **Master Index for the Online Documentation**

  Although the full-text search function delivered on the Natural documentation CD-ROM is very useful as a means of quickly locating all documents for a certain search term, it can also be frustrating in that the number of hits for a typical search is usually quite large and the order of the documents returned is arbitrary. To enable immediate access to frequently needed information on Natural key components such as statements, commands, parameters and utilities, an (as yet basic) master index function has been provided. This function can be found in the navigation bar, which is located in the top right-hand corner of each HTML page. For the next version, a considerable increase of the number of index tokens is planned.

- **Change in Terminology**

  For consistency reasons, the documentation now distinguishes between "user exits" and "application programming interfaces". For the definitions of these terms, refer to the Natural Glossary on the Natural Documentation CD.

Migration Hints

- Natural IMS/TM Interface
- Natural Roll Server
- Natural Version 4.1.1 Buffer Pool
- Natural Advanced Facilities
- Using a Version 3.1 FUSER File to be Shared by Natural Versions 3.1 and 4.1
- Application Programming Interfaces USR0340N and USR0341N

Natural IMS/TM Interface

Use of the Non-Conversational Natural IMS/TM Interface

This information applies only for users of the non-conversational Natural IMS/TM interface.

If you want to use the Natural IMS/TM Interface Version 4.1 together with the Natural IMS/TM Interface Version 2.3 in the same IMS/TM MPP environment, you must use the Authorized Services Manager of Natural Version 4.1 for storing the simulated SPA. The following steps are required after you have installed base Natural Version 4.1:

1. Copy the module NATAU31B to the APF authorized library used by the Authorized Services Manager.
2. Start the Authorized Services Manager of Natural 4.1 for the subsystem identified by the Natural/IMS profile parameter SPATID.

The Authorized Services Manager will issue a message to indicate that the service is also established for a version prior to Natural Version 4.1.

Please keep in mind that all non-conversational Natural sessions in the same IMS/TM environment must use the same value for SPATID.

Use of Roll Files

This information only applies to users of Roll Files, that is, it applies to users who do not use a Roll Server.

If you want to share Roll Files between the Natural IMS/TM Interface Version 4.1 and the Natural IMS/TM Interface Version 2.3, the Roll Files must be formatted with the Roll File Initialization module NATRSFI of Natural Version 2.3.

Please note that the DD names of the Roll Files are identical for all versions of the Natural IMS/TM Interface. Therefore it is not possible to use Roll Files of different versions in the same MPP.

Natural Roll Server

From z/OS Version 1.2 on, the Roll Server allocates its Local Roll Buffer in a Memory Object "above the bar". Use the MEMLIMIT parameter on the EXEC statement of the Roll Server started task to ensure that enough memory can be allocated "above the bar".

The allocatable amount is controlled by the MEMLIMIT parameter of the JCL EXEC statement and SMF exit IEFUSI. If not enough space for the LRB is available in memory objects, the Roll Server terminates with the message:

```
RSM0052 - Not enough storage for IARV64 GETSTOR - Increase MEMLIMIT
```


Natural Version 4.1.1 Roll Server

If you want to migrate from an existing Natural Version 4.1.1 installation,

- stop all Natural Version 4.1.1 Roll Servers,
- re-format the Roll File using the Natural Version 4.1.2 Roll File formatting routine NATRSRFI,
- restart the Roll Servers,

before you start any Natural Version 4.1.2 session.

Natural Advanced Facilities

A new spool file layout is provided for improved data storage and access performance. You can convert a Version 2.3 spool file to Version 4.1, but not a Version 2.2 spool file.

If you want to use a VSAM spool file with Natural for VSAM Version 4.1, you will have to create a new VSAM file cluster.

An existing spool file can be converted by executing the new format function. Old reports are not converted. If you are using a VSAM spool file, a new dataset for Detail Records must be assigned and initialized . The dataset for the VSAM Index file is no longer used.

Using a Version 3.1 FUSER File to be Shared by Natural Versions 3.1 and 4.1

If you use an existing Natural Version 3.1 FUSER system file to be shared by Natural Versions 3.1 and 4.1, you must upgrade your Natural Version 3.1 installation to Version 3.1.6.

Natural Version 3.1.6 Service Pack I0010 or a subsequent Service Pack is required. Service Pack I0010 and all subsequent Service Packs contain all the necessary Version 3.1 based solutions for Natural Version 4.1.

This service pack is also required to provide certain system command functionality for source objects of type Function that may be created and executed with Natural Version 6.1.1 for UNIX and Windows. For details on the functionality provided, see Compatibility with Natural Version 6.1.1 for UNIX and Windows.

The V31COMP compiler option may be used to ascertain that Natural source objects that are edited and cataloged with Natural Version 4.1 can still be cataloged with Natural Version 3.1.

If you are using a Natural Development Server with Natural Version 5.1.1 on Windows, you cannot share a Version 3.1 FUSER file between Natural Versions 3.1 and 4.1. It is necessary that you upgrade your installation to Natural Version 6.1.1 before sharing the FUSER file. Natural Version 5.1.1 will not properly handle the features available with the above-mentioned Natural Version 3.1.6 Service Packs applied.

Application Programming Interfaces USR0340N and USR0341N

The application programming interfaces USR0340N and USR0341N (Natural Buffer Pool Interfaces) delivered with Natural Version 3.1 will not work properly under Natural Version 4.1. If you are using copies within application libraries on the FUSER system file, you should replace the interfaces with the new Version 4.1 ones to run under Natural Version 4.1.

For further considerations to set up the environment for using application programming interfaces in different versions, refer to User Application Programming Interfaces USR* in Library SYSEXT.

Compatibility

Applications Created with Previous Natural Versions

Applications that were created with Natural Version 2.2, 2.3 or 3.1 for Mainframes can be executed with Natural Version 4.1 for Mainframes without any adjustments to the programs or any conversion or migration procedure being required. This applies also to programming objects that have been cataloged with the Natural Optimizer Compiler.

Applications cataloged with Natural Version 2.1 must be recataloged before execution with Version 4.1. This applies also to data areas that are to be used in programming objects.

Software AG strongly recommends that existing applications be recataloged with Natural Version 4.1 to take advantage of improved runtime handling.

Execute Applications Cataloged with Natural Version 4.1 with Natural Version 3.1

To execute applications cataloged with Natural Version 4.1 with Natural Version 3.1, it is necessary to recatalog the application with Natural Version 3.1.

Compatibility with Natural Version 5.1.1 for OpenVMS, UNIX and Windows

Natural Version 4.1 for Mainframes will be syntax-compatible with Natural Version 5.1.1 for OpenVMS, UNIX and Windows.

Exceptions

Features available in Natural Version 5.1.1 for OpenVMS, UNIX and Windows, but not in Natural Version 4.1 for Mainframes:

- REQUEST DOCUMENT statement

Features available in Natural Version 4.1 for Mainframes, but not in Natural Version 5.1.1 for OpenVMS, UNIX and Windows:

- RESIZE statement
- MULTI-FETCH option for READ, FIND, HISTOGRAM statements
- ESCAPE MODULE and ESCAPE TOP REPOSITION statements
- TO keyword for READ and HISTOGRAM
- DYNAMIC SEQUENCE and WITH REPOSITION clauses for READ statement
- New comparators LESS/GREATER THAN and LESS/GREATER EQUAL for READ and HISTOGRAM statements
- Usage of dynamic variables in the statements DISPLAY, WRITE, PRINT, STACK, INPUT, REINPUT, IF/AT BREAK
- IF/AT BREAK statement with /n/ clause for binary variables
- MOVE SUBSTR statement for binary variables
- MOVE ALL statement for binary variables
- Advanced arithmetic operations (multiplication/division) with Date / Time
- COMPOPT system command options TQMARK, NMOVE22, MASKCME
- System variables *LINE, *TP, *TPVERS
- MASK option JJJ
- Selection boxes (session parameter SB)

For further platform specific restrictions, see the respective documentation.

Compatibility with Natural Version 6.1.1 for UNIX and Windows

Natural Version 6.1.1 for UNIX and Windows enables the creation and execution of Natural objects of type Function. Source objects of type Function can be stored in a Natural system file on mainframe computers, but execution of such objects is not possible. The restrictions are similar to those for source objects of type Dialog.

The following table lists the system command functionality that is supported for objects of type Function:

System Command	System Command Functionality Supported	Detailed Explanation
CATALOG CHECK STOW	No	Natural Error NAT0924 is issued.
DELETE	Yes	
EDIT	No	Natural Error NAT4439 is issued.
LIST	Yes	Subcommands CA (Catalog), ED (Edit) and ST (Stow) are not allowed.
LIST DIR	Yes	
READ	Yes	
RENAME	Yes	
SAVE	Yes	
SYSMAIN	Yes	
SYSOBJH SYSTRANS NATUNLD/NATLOAD	Yes	

Natural System File Layout

The layout of the Natural system files has not been changed compared to Natural Version 3.1.

Natural CICS Interface Macro Parameters

The parameter CICSPLX has been changed in the NCMDIR macro in NCISCPCB.

The parameter FLDLEN has been changed in the NCMPRM macro in NCIPARM.

For more information about the changes in the Natural CICS Interface, see Operating System and Teleprocessing Interfaces, Natural CICS Interface.

Natural IMS/TM Interface

If in a multi-session environment the active session is terminated by a program-to-program switch, all suspended sessions are discarded.

In the Natural IMS/TM Interface, several error codes have been replaced by Natural error messages. For more information about the changes in the Natural IMS/TM Interface, see Operating System and Teleprocessing Interfaces, Natural IMS/TM Interface.

Natural Com-plete/SMARTS Interface

In the Natural Com-plete/SMARTS Interface, several error codes have been replaced by Natural error messages.

The old macro NCMCFPRM has been replaced with a new macro NFMPRM.

For more information about the changes in the Natural Com-plete/SMARTS Interface, see Operating System and Teleprocessing Interfaces, Natural Com-plete/SMARTS Interface.

Compiler

The V31COMP option has been provided for the COMPOPT command to reject syntax constructions that are supported by Version 4.1, but not by Version 3.1.

The NMOVE22 option has been provided for the COMPOPT command to replace special purpose zaps.

For more information about the changes in the Natural Optimizer Compiler, see System Commands, Editors and Utilities, COMPOPT Command.

Arithmetic Operations

Format conversion from literals, alphanumeric fields or packed numeric fields to floating-point fields have been improved.

In an arithmetic result is of format F4, now fields of format F8 are used as intermediate result to improve the precision.

Performance and precision of the system function SQRT for packed and unpacked numbers has also improved.

These improvements may lead to slightly different results. However, these results will be of greater precision than those obtained with Version 3.1.

For more information, see Programming Language Enhancements, More Precise Results for Floating Point Conversion.

Natural Optimizer Compiler

The options NODBG, NOSGNTR and LOOPS have been revised and now have a different effect. The modified effects of these parameters also make some special purpose zaps obsolete. Several Natural Optimizer Compiler algorithms have been adapted to the standard Natural arithmetic, thus guaranteeing identical program results regardless of whether the NOC is used for program generation or not.

For more information about the changes in the Natural Optimizer Compiler, see Natural Optimizer Compiler.

Utility Activation

From Natural Version 4.1, Natural invokes a Natural utility without performing a logon to the corresponding utility library in the FNAT system file. As a result, the performance is improved and Natural preserves the global data area (GDA) and/or application-independent variables (AIV). The current user library and the steplib settings are maintained. The new behavior can have an impact on Natural Version 4.1 batch procedures that contain logon instructions to utility libraries.

For more information about the changes to the utility activation, see System Commands, Editors and Utilities, Utility Activation.

Application Programming Interfaces

With Natural Version 4.1, the Application Programming Interfaces USR* in Library SYSEXT will run in a special mode that removes the necessity to set further steplibs for processing. This will reduce the impact on the Natural buffer pool search logic and will improve performance significantly if user exits are used extensively within user written applications.

For more information about the changes concerning the Application Programming Interfaces, see System Commands, Editors and Utilities, Application Programming Interfaces.

Data Area Editor

Data areas containing field definitions that make use of new features introduced with Natural Version 4.1 (e.g. dynamic variables) are stored in a new and extended source format in the FUSER system file. Such data areas cannot be used or edited with Natural Version 3.1.

Data areas containing only field definitions that are valid with Natural Version 3.1 are stored by default in the old format compatible with Natural Version 3.1 to allow for sharing the data area between a Natural Version 3.1 and Natural Version 4.1 environment.

The V31COMP compiler option may be used to ascertain that a data area that is edited and cataloged with the Natural Version 4.1 data area editor can still be cataloged with Natural Version 3.1.

For more information, see System Commands, Editors and Utilities, Data Area Editor.

SYSNCP Utility

The user exits of the SYSNCP utility have been modified. For more information about the changes to the SYSNCP utility, see System Commands, Editors and Utilities, SYSNCP Utility.

Profile Parameters and Macros

If one of the values 1, 2 or 3 has been specified for the ADAMODE parameter, but an Adabas subcomponent is unable to perform an Adabas X48 communication, an error message is issued.

For Natural Versions 3.1 and 4.1, the default parameter setting is ADAMODE=2. If you use SMA (System Maintenance Aid) to install Natural, the ADAMODE parameter is set to 0 (zero) in BS2000/OSD and Com-plete/SMARTS environments.

With Natural Version 4.1, you cannot specify a maximum size for the DATSIZE parameter any more, only a minimum size can be specified. Use the new profile parameter OVSIZE to limit memory allocation.

Because the Natural Turbo Plug-in is now an integral part of Natural, the only valid value for the PLUGIN parameter is now OFF.

The effect of the value 0 for the LT parameter (LT=0) has been changed, so that LT is consistent with other limits, such as MADIO and MAXCL.

The parameter macro NTFILE has been replaced by the new parameter macro NTLFILE with different syntax, but equivalent functionality.

The process of translating system library output as set by TS=ON has been changed. For more information, see Translation of System Library Output.

For more information about changes concerning profile parameters and macros, see Miscellaneous Changes and Enhancements, Profile Parameters.

Performance

Several runtime algorithms for assignments, arithmetic operations and comparisons have been improved for better performance. In most cases, it is not required that the Natural objects are recataloged to benefit from the enhancements.

The Natural Turbo Plug-in is now an integral part of Natural. This includes the new buffer-pool search algorithm to reduce the time required to search for an object in the buffer pool and the buffer-pool cache to reduce system file accesses. In addition, the Adabas multi-fetch feature speeds up the process of loading objects into the buffer pool.

The compression rate has been enhanced to reduce both the compressed size of a Natural thread and the time needed for a roll-in/roll-out event (particularly at terminal I/O).

Translation of System Library Output

With the profile parameter TS or the session parameter TS set to ON or the compilation option TSENABL=ON (set with the COMPOPT system command), output from Natural system libraries is translated using a translation table, which may be necessary for locations with non-standard lower-case usage.

With Natural Version 3.1, this translation is not performed for each field written into the Natural page buffer, but for the entire contents of the page buffer immediately before being sent to the screen. This may in some cases lead to incorrect results: when the contents of the page buffer comes from different programs with different TS/TSENABL settings - that is, some parts of the page are to be translated, others are not - the last applicable setting will be used, and the page will be either translated entirely or not at all. It may also occur that the last page is output after the end of the program when the TS=ON/TSENABL=ON setting is no longer available to Natural and this last page will then not be translated.

These translation errors will be corrected with Natural Version 4.1: the translation will be performed individually for each field at the time when it is written into the page buffer, according to the current TS/TSENABL setting that applies to each field. Consequently, the resulting output may not be the same as with Natural Version 3.1.

Data View Definition

With Natural Version 3.1 for Mainframes, a data view may contain an ordinary group field with an index (or index range) definition, when periodic group fields follow. However, this is incorrect since the group field is no periodic group field as such. In addition, in Natural for UNIX or Windows this leads to a syntax error.

Example:

Definition in DDM	**DEFINE DATA View**

`P 1 AP PE-GROUP`
`G 2 AQ GROUP-IN-PE-GROUP`
`  2 AR PE-FLD1`
`  2 AS PE-FLD2`
	`1 V1 VIEW OF DDM..`
	`  2 GROUP-IN-PE-GROUP (1:3)`
	`    3 PE-FLD1`
	`    3 PE-FLD2`

With Natural Version 4.1. for Mainframes, this construct will also be rejected at compilation, and the source code of the affected programming objects must be changed.

The correction rule is just to replace the indexed group field by the corresponding periodic group name in the data view definition.

Example:

Definition in DDM	DEFINE DATA View
P 1 AP PE-GROUP G 2 AQ GROUP-IN-PE-GROUP 2 AR PE-FLD1 2 AS PE-FLD2	1 V1 VIEW OF DDM.. **2 PE-GROUP (1:3)** 3 PE-FLD1 3 PE-FLD2

Position Calculation for INPUT, PRINT and WRITE Statement Corrected

With Natural Version 3.1, if the position of an output element in an INPUT, PRINT or WRITE statement is determined by both tabulation (*n*T) and space insertion (*n*X) and the tabulation position is greater than 1, for example WRITE 3T 4X #FIELD, the calculated position of the output item is by one byte less than the correct position.

With Natural Version 4.1, calculation of the position has been corrected. The calculation result is now the same as with Natural for UNIX or Windows. The new calculation applies if the programming object is recataloged. This change may lead to slightly different output.

This change does not affect output elements with

- only tabulation (*n*T) or
- only space insertion (*n*X) or
- both tabulation and space insertion with a tabulation position of 1, for example WRITE 1T 5X #FIELD.

LOGON Command

All parameters specific for the Natural Optimizer Compiler that have been set using the system command NOCOPT and that are not provided with initial default values will be reset when a LOGON command is issued.

Special-Purpose Zaps

As of Version 4.1, numerous special-purpose Zaps superseding the Version 3.1 special-purpose Zaps have been implemented as new parameters. The following table lists the non-sourced Version 3.1 Zaps and their Version 4.1 successors.

Version 3.1 Zap	Version 4.1 Zap
NA42001	NA61001
NA42003	NA61002
NA42102	NA61003 *
NA42112	NA61004
NA43009	NA61005
NA44094	NA61006
NA44107	NA61007
NI34007	NI61001
NV51002	NV61001
NV51001	NV61002

* This Zap is an integral part of Natural Version 4.1.2 or above.

Dropped Functionality

- NaturalX DCOM Functionality
- ADASTAR Functionality
- Natural CICS Interface Macro Parameters
- Natural IMS/TM Interface Profile Parameters COLPSCR and LINPSCR
- Natural Com-plete/SMARTS Interface Profile Parameters ADDBUF, CRELO, EDITWRK and NUCRELC
- V22COMP Option Removed from COMPOPT Command
- NTCPC Utility
- SYSBUS System Command
- SYSDB2 Catalog and Procedure Maintenance Support
- Profile Parameters and Macros

NaturalX DCOM Functionality

As of Natural Version 4.1.2, the NaturalX DCOM functionality is no longer supported on mainframes. Therefore, the TYPE=DCOM option in the macro NTBPI has been removed.

The libraries SYSEXCOC and SYSEXCOM are no longer delivered with the Natural example INPL (EXPL).

The component-oriented language constructs of Natural (e.g. CREATE OBJECT, SEND METHOD) will however continue to be available for local execution.

ADASTAR Functionality

As the ADASTAR functionality is no longer supported by the Adabas Version required for Natural 4.1, it is no longer supported by Natural Version 4.1.

Natural CICS Interface Macro Parameters

The parameters CDATE, CTIME, ROLLFLS and SWPSIZE have been dropped from the NCMDIR macro in NCISCPCB.

The parameters ASA, CDATE and CTIME have been dropped from the NCMPRM macro in NCIPARM.

For more information about the changes in the Natural CICS Interface, see the section Miscellaneous Changes and Enhancements, Natural CICS Interface.

Natural IMS/TM Interface Profile Parameters COLPSCR and LINPSCR

The Natural IMS/TM interface profile parameters COLPSCR and LINPSCR are obsolete and have been dropped. Their functionality is now provided by the Natural profile parameter TMODEL.

If you have explicitly specified a value for COLPSCR and LINEPSCR, an error message will be issued during the compilation of the Natural/IMS interface parameter module and the generation of the parameter module will fail.

Natural Com-plete/SMARTS Interface Profile Parameters ADDBUF, CRELO, EDITWRK and NUCRELC

The Natural Com-plete/SMARTS Interface profile parameters ADDBUF, CRELO and NUCRELC are obsolete and have been dropped.

Also the parameter EDITWRK is obsolete and has been dropped. The functionality of this parameter is now provided by the Natural profile parameter EDBP.

If you have explicitly specified a value for the above parameters, an error message will be issued during the compilation of the Natural/Com-plete interface parameter module and the generation of the parameter module will fail.

V22COMP Option Removed from COMPOPT Command

With Natural Version 4.1.2, the V22COMP option of the system command COMPOPT (Allow old Version 2.2 Syntax) has been removed. Consequently, this option is also invalid for the NTCMPO macro, the CMPO profile parameter and the OPTIONS statement.

NTCPC Utility

With Natural Version 4.1, the utility NTCPC (library SYSPC) is no longer supported. The delivery of the NTCPC utility is discontinued as of Natural Version 4.1.2. Software AG recommends that existing applications using the SYSPC modules be modified so that they can be used with the Natural Object Handler (SYSOBJH) instead.

SYSBUS System Command

With Natural Version 4.1, the Natural system command SYSBUS is no longer available. Instead, you use the system command BUS which performs the same function.

SYSDB2 Catalog and Procedure Maintenance Support

The Catalog and Procedure Maintenance functions are not adapted to DB2 Version 6. No further enhancements of these functions are planned for future versions. The procedure Maintenance does not run with DB2 Version 6 or higher. It is recommended to use the Create Procedure Statement or Predict instead.

Profile Parameters and Macros

Because the NaturalX DCOM functionality has been dropped, the profile parameter DCOM, the macro NTDCOM and the value DCOM of the NTBPI macro keyword parameter TYPE have been dropped.

The IDSIZE and the WSIZE profile parameters have also been dropped.

For the Natural profile parameter RPC, the subparameter ACIPATT has been dropped because it has become obsolete since ACI is the only supported transport method.

The function MIGRATE for the parameter SFILE in the NVSPARM module has been dropped.

For more information about changes concerning profile parameters and macros, see the section Miscellaneous Changes and Enhancements, ProfileParameters.

Changes Introduced with Previous Natural Versions

The following important changes that have been introduced with previous Natural Versions should be considered when you upgrade your installation to Natural Version 4.1:

- Version Check at Session Initialization Refined
- Version Check for Module NATCONFG Introduced
- Length Calculation for Edit Masks with Leading Filler Character Corrected
- Natural Remote Procedure Call
- Determination of Window Size Corrected
- Changes to the Natural Load Library

Version Check at Session Initialization Refined

With Natural Version 3.1.5, the check for matching versions of the Natural nucleus and the FNAT system file has been refined. To prevent unpredictable errors during session execution, any attempt to start a Natural Version 4.1 nucleus with a Natural Version 2.3 or 3.1 FNAT system file will be rejected.

Version Check for Module NATCONFG Introduced

With Natural Version 3.1.5, a check for matching versions of the Natural nucleus and configuration module NATCONFG has been introduced. To prevent unpredictable errors during session execution, any attempt to start a Natural Version 4.1.2 (or above) nucleus with a NATCONFG module from a previous system maintenance (SM) release or version will be rejected.

Note:
If you adapted an existing NATCONFG module for your own purposes, you cannot continue using that module. Transfer your changes to the new NATCONFG source before you assemble and link NATCONFG as described in the corresponding installation description.

Length Calculation for Edit Masks with Leading Filler Character Corrected

With Natural Version 3.1.5, leading filler characters specified in edit masks for numeric operands are no longer counted as being part of the edit mask. This may reduce the output length of numeric fields with an associated edit mask so that following output in the same line is shifted one position to the left. To apply the correction to an existing object, it must be cataloged with Natural Version 3.1.5 or above.

Example:

```
P(P3) = -12
DISPLAY P (EM=-*ZZZ)
```

Output before Natural Version 3.1.5:

```
  P
-----
 -12
```

Output with Natural Version 3.1.5 or above:

```
 P
----
 -12
```


Natural Remote Procedure Call

As the CSCI transport protocol is no longer supported, the CSCPATT keyword subparameter of the NTRPC macro is rejected with Natural Version 3.1.6. The CSCPATT subparameter of the RPC profile parameter is ignored.

The value CSCI is rejected if specified as transport protocol for the DFS, RDS or TRANSP keyword subparameters of the NTRPC macro or for the DFS, RDS or TRANSP subparameters of the RPC profile parameter.

Determination of Window Size Corrected

According to the Natural Statements Manual, the size of a window defined by means of the DEFINE WINDOW SIZE AUTO statement is determined by the window data, and not by the size of the window title. With previous versions of Natural for Mainframes, the size of the window was determined by the size of the window title.

With Natural Version 3.1.6, this has been corrected to make Natural for Mainframes compliant with Natural on Windows and UNIX. Now the window title is truncated if its size exceeds the size of the window. The size of windows that have been defined using the SIZE AUTO clause may also be reduced.

Changes to the Natural Load Library

With Natural Version 3.1.6, the following changes have been made to the Natural load library:

- The module PRDXR34 has been renamed to PRDXREF.
- The module SPENUC has been added to support Natural Construct Spectrum Version 4.4.1 or above.

End of Maintenance of Natural Versions

- The maintenance for Natural Version 3.1.5 for Mainframes ends 6 months after the release of Natural Version 4.1.2.
- The maintenance for Natural Version 4.1.1 for Mainframes ends with the release of Natural Version 4.1.2.

Natural and Other Software AG Products

To use the following Software AG products in conjunction with Natural Version 4.1, the following product versions (or above) are required:

Product	Prod. Code	Version
Adabas	ADA	7.1.3
Adabas Online System	AOS	7.1.3
Adabas SQL Server	AQA	5.1.2
Adabas Native SQL	SQL	2.2.1
Adabas Review	REV	4.2.2
Adabas Text Retrieval	TRS	2.1.4
Com-plete	COM	6.2.1 Patch Level 4 with APS Version 2.7.2
Con-form	CMF	3.4.1
Con-nect	CNT	3.4.1
Entire DB Engine	AER	1.5.5
EntireX Broker Stub	EXX	6.2
Entire Event Management	NCL	2.1.2
Entire Net-Work	WCP	5.8.1 (This product is required if you are using Natural Security in a heterogeneous environment.)
Entire Operations	NOP	4.1.2
Entire Output Management	NOM	2.2.1
Entire System Server	NPR	3.2.1
Entire Transaction Propagator	ETP	1.5.2 (ETP Version 1.5.2 does also run under Natural Version 3.1.6; for the Software AG products required with Natural Version 3.1.6, see the Natural Version 3.1.6 Release Notes in the Release Notes (RN) Archive on the current Natural Documentation CD).
Natural Advanced Facilities	NAF	4.1.2
Natural CICS Interface	NCI	4.1.2
Natural Com-plete/SMARTS Interface	NCF	4.1.2
Natural Connection	NTC	4.1.2
Natural Construct	CST	4.5.1
Natural Development Server	NDV	2.1.2
Natural for DB2	NDB	4.1.2

Product	Prod. Code	Version
Natural for DL/I	NDL	4.1.2
Natural for SQL/DS	NSQ	4.1.2 Note: IBM also refers to SQL/DS as DB2 Server for VSE & VM.
Natural for VSAM	NVS	4.1.2
Natural IMS/TM Interface	NII	4.1.2
Natural ISPF	ISP	2.5.2
Natural Optimizer Compiler	NOC	4.1.2
Natural Security for Mainframes	NSC	4.1.2
Natural SAF Security	NSF	4.1.2
Natural TIAM Interface	NRT	4.1.2
Natural TSO Interface	NTI	4.1.2
Natural UTM Interface	NUT	4.1.2
Natural VM/CMS Interface	NCM	4.1.2
NaturalX	NXX	No longer supported.
Predict	PRD	4.3.1
Predict Application Control	PAC	2.3.2 Service Pack 5
Predict Case	PCA	2.5.2 Service Pack 1
Review Natural Monitor	RNM	3.6.3
System Automatic Tools	SAT	3.1.2
Super Natural	NSN	3.3.3

Although it may be technically possible to run versions of other Software AG products older than the ones listed above in conjunction with a new version of Natural, Software AG cannot continue to support such combinations.

Information on Upcoming Releases

Changes and Enhancements Planned for Natural Version 4.1.3

With the next system maintenance level of Natural (Version 4.1.3), the following changes and enhancements will be provided:

- Natural RPC Version 6.1
- Natural Com-plete/SMARTS Interface

Natural RPC Version 6.1

As of Natural RPC Version 6.1, the Natural server concept will be supported by the Natural RPC server. The benefits are in general:

- Conversations no longer block the Natural RPC server until they are closed. This means, a single Natural RPC server is able to process several concurrently opened conversations.
- The start of new replicates of a Natural RPC server is more efficient, because the overhead to initialize a Natural session is minimized.

Further benefits will be available under CICS:

- The remote CALLNAT can be executed under the user ID of the client
- A DB2 thread will no longer be blocked until the Natural DB2 server is terminated.

In addition, optional parameters will be supported in the parameter list of a remote CALLNAT execution. That is, the client may use the nX notation to indicate skipped parameters in its parameter list and/or may omit the rightmost skipped parameters. The remote CALLNAT on the server has to define the optional parameters with the keyword OPTIONAL and may check for their existence using the SPECIFIED condition.

Natural Com-plete/SMARTS Interface

The Natural Com-plete/SMARTS Interface will support the IBM LE/370 language environment.

Changes and Enhancements Planned for Next Major Release of Natural

With the next major release of Natural (following Version 4.1), the following changes and enhancements will be provided:

- Discontinued Support of Applications Cataloged with Natural Version 2.2
- Discontinued Support of V31COMP Compiler Option
- Discontinued Support of Utilities SYSTRANS and NATUNLD/NATLOAD
- Changed Default of Data Area Source Format

Discontinued Support of Applications Cataloged with Natural Version 2.2

The next major release of Natural after Version 4.1 will require that all applications cataloged with Natural Version 2.2 be recataloged before execution with that version.
This will apply also to data areas that are to be used in programming objects.

Software AG strongly recommends that existing applications be recataloged with Natural Version 4.1 to take advantage of improved runtime handling.

Discontinued Support of V31COMP Compiler Option

With the next major release of Natural after Version 4.1, the V31COMP compiler option will be dropped. This option can be used in Natural Version 4.1 to disallow the usage of new Natural Version 4.1 programming language enhancements for compatibility purposes with Natural Version 3.1.

Discontinued Support of Utilities SYSTRANS and NATUNLD/NATLOAD

With the next major release of Natural after Version 4.1, the utilities SYSTRANS and NATUNLD/NATLOAD will cease to be available. The functionality provided by SYSTRANS and NATUNLD/NATLOAD is available with the Natural Object Handler which was introduced with Natural Version 4.1.

Changed Default of Data Area Source Format

With Natural Version 4.1, the default format for storing data areas in the FUSER system file is the format compatible with Natural Version 3.1. With the next major release of Natural after Version 4.1, the default will be changed to the new and extended format introduced with Natural Version 4.1.

Examples

The example library SYSEXV provides examples of the new features of Natural Version 4.1.

